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SOME FLESHY FUNGI OF STOW, MASSACHUSETTS.

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AT intervals during the past nine years, the writer has searched the town of Stow, Massachusetts, for species of the fleshy fungi. Stow is situated about 26 miles west of Boston and may be reached by the Fitchburg division of the Boston and Maine System. The township is large in area but small in population; the soil, except in the swamps, is largely gravel and sand; the surface is undulating and hilly with the exception of Boone's Plain which is level, sandy and gravelly with a stunted growth of pines and white birch. The vegetation is rather rich, woods of pine, oak, chestnut, birch and maple abounding, with elm, ash, hickory, spruce, hemlock, tamarack and cedar interspersed. All the swamps are infested with poisonous dogwood, *Rhus Vernix*, and poisonous ivy, *Rhus Toxicodendron*, is very abundant.

The largest swamp is least prolific in fleshy fungi owing to the thick coarse grass and some other cause that I cannot explain. All but the southwesterly part of the township furnishes good territory to search, and one piece of swampy ground, which I frequent, is usually very productive of pink-spored Agarics and rare species of *Amanita*, *Hygrophorus*, *Russula*, *Inocybe*, *Naucoria* and *Gomphidius*. Except in one locality, I seldom find a *Boletus* in any of the swamps; this place, however, until the past season, has always given me magnificent specimens of *B. spectabilis*, *clintonianus*, *eximius*, and *punctipes*, and *Boletinus paluster* and *cavipes*. The farmers of the town

are strongly opposed to trespassers, so much so that in 1906 I found it best to obtain express permission to search each piece of territory I hunted over, and I was requested to keep out of growing crops, newly plowed fields, and not to smoke — all reasonable requests.

The past season marked, I hope, the culmination of four successive dry seasons in Eastern Massachusetts. Yet the botanist should, after all, be grateful for such meteorological conditions, for they may be necessary to cause some fungi to fruit, that otherwise would not appear. Too much moisture usually produces premature decay, too much dryness induces immaturity in the species commonly met with in our wanderings.

I began search for fungi May 10 ult. and was much chagrined to find that Nature had anticipated me by bringing to maturity *Morchella esculenta* Pers. many days earlier than usual. Repeated efforts, however, were rewarded bountifully and my taste was gratified with several meals. At this time excellent and numerous specimens were found in all stages of growth, of *Entoloma clypeatum* L. (the dull yellow form), in an apple tree orchard and in identically the same situs where in 1909 I found *Omphalia pyxidata* Bull., an absurdly named fungus, as it seems to me. Between May 12 and October 30 ult. I collected at intervals Dr. Peck's species *Entoloma strictius*. I believe this species to be very variable in color and size and frequently productive of doubt as to its identity. Even Dr. Peck is puzzled at times as we may learn from this quotation taken from a personal note received last October: "On my trip to the Adirondacks in June I kept finding now and then in the sphagnous swamps an *Entoloma* which I did not recognize. It would occur one or two in a place, the pileus was generally conical or subcampanulate, varying somewhat in color but usually dark brown when moist and the whole plant was quite fragile. I was disposed to think I had a new thing, till I found in similar places a form with more convex pileus and decidedly umbonate, which connected very nicely with *E. strictius* and knocked the new species idea completely out of my head. The type of the species was collected in the fall but I now know from my own and others' experience that it may also occur in spring and summer, and that it is much more variable than I formerly supposed." In May I found no less than eight specimens of this species of large size growing from a common base. On the opposite side of the same swamp in mixed woods I found the largest individuals I have ever met with; they were

on the average twice as large as the type but corresponded with Dr. Peck's description in all essential characteristics.

Entoloma modestum Pk. was collected in its usual habitat in May and June and quite to my surprise, again on October 30. The autumnal form is somewhat smaller but differs in no other respect from the type.

During July and August I collected a small white *Hygrophorus*, and also a black one that was very variable in size and tint, both very viscid and strong smelling, the former slightly mephitic, the latter as soon as it begins to decay smelling of bad fish.

There are those who would probably refer the black species to *H. luridus* B. & C.; but who knows what *H. luridus* really is? Not the writer. The white plant is wholly concolorous and possesses more than ordinary interest for all mycologists, because Dr. W. W. Ford of Johns Hopkins Medical School, Baltimore, has found it poisonous to rabbits and guinea pigs. These two species of *Hygrophorus* were found growing with *H. laetus* (Pers.) Fr. The white plant upon drying loses all odor and becomes tawny; the black plant retains its color but loses its odor. *H. laetus*, as I find it, frequently has a mephitic odor. I think it quite probable that ultimately our black and our white plants will be declared to be only varietal forms of *H. laetus*.

On August 3 I found in its usual situs, in a chestnut grove, *Entoloma grande* Pk., a rare plant according to Dr. Peck, as he informed me in September. The plants were of average size, a little lighter in color than usual and few in number. I cannot help remarking the strong resemblance superficially between this plant and *E. sinuatum* Fr.; both species grow in this same locality not over 75 feet from where *E. clypeatum* was found. Although Dr. Peck originally thought that *E. grande* might be poisonous, he now, having tried it, pronounces it edible. (See Bull. N. Y. Mus. 139, p. 39-40.) Rolland also in his "Atlas des Champignons de France" p. 58, says that *E. clypeatum* "est comestible." I have found *E. grande* in this locality for six consecutive seasons and have sent fresh and dried specimens to Dr. Peck who has never hesitated to pronounce them *E. grande*. It is a distinguished looking plant belonging to the section *Genuina* of Peck's monograph of this genus. (See Bull. N. Y. Mus., 131, p. 48.)

About this time I began to find *Russula obscura* Rom. and *Russula palustris* Pk., the latter under tamaracks and pines in a swamp, the

former on low land adjoining a swamp under pines and deciduous trees; both are red plants. The only way I have been able to do anything with red *Russulae* is to study one species at a time under all conditions of growth. Until this season I have passed them by but with the advent of Peck's monograph and Dr. Kauffman's, I have plucked up sufficient courage to attack some of these species and I propose to continue the work. *R. obscura* is, generally speaking, larger than *R. palustris*, and the stem and flesh, especially the stem, become cinereous at maturity; the stem before maturity turns from white to cinereous if you handle it; handled roughly it becomes smoky brown, nearly black in some plants. *R. palustris* is slightly and tardily acrid to the taste, its pileus at maturity becomes broadly depressed, the depression shallow and saucer-like, and the color of the center is a dark blood red. The stem is white, delicately tinged with pink. Both species are usually infested with larvae. *R. obscura*, once known, is much more easily identified than *R. palustris* because of the changes in color of the flesh of pileus and stem.

Gomphidius roseus Fr. was found twice under pines in a swamp during the last ten days of July. My plants resembled very closely Michael's illustration No. 47, Part two.

Clavaria muscoides L. was found twice in August in a swamp under pines and deciduous trees in sphagnum. The species was identified by Dr. Peck. On this same trip I was very glad to find *Collybia strictipes* Pk.; it is well named because of its straight, tense appearance. The identification was by Dr. Peck.

Between August 23 and September 10 I found in two swampy localities numerous plants of what proved to be *Lepiota metulispora* B. & Br. Most of the plants grew from the vegetable humus covering the exposed and spreading roots of an enormous white oak. This fungus is remarkable for its peculiarly shaped spore which is described as nine-pin shaped, oblanceolate and obliquely clavate. The plant closely resembles *L. clypeolaria* Bull. in external character. Morgan says our American plant is considered a "form" of the Ceylon species.

On August 25 I collected two exceedingly interesting plants in my favorite swamp, *Amanita cariosa* (Fr.) Gill. and *Inocybe echinata* Roth, the former growing at the base of a large maple, the latter in sphagnum under a tamarack. The *Amanita* has apparently escaped the eyes of American mycologists until the past season; for I am credibly informed that it has never before been reported from America.

At first sight it reminded me of *Amanitopsis strangulata* (Fr.) Roze in color and size of pileus, and of *Lepiota procera* Scop. in annulus and stem. I quote the following description from Worthington G. Smith's "Synopsis of the British Basidiomycetes," p. 16: "*A. cariosa* Gill. (from the carious stem). *P.* soft, even, brown, whitish-brown, or dark-grey, unequally clad with thin, nearly white patches and clouds. *St.* fragile, somewhat enlarged below, white, pale umber and brown, scaly at base. *G.* adnate then seceding and free. Suspected poisonous. Woods. Sept. $4\frac{7}{8} \times 5\frac{7}{8} \times \frac{3}{4}$. Closely allied to *A. spissa* Opiz."

The annulus of my plant was fixed, thin and dry. The exact description of my plant was drawn from the fresh specimen by Mr. L. C. C. Krieger of Cambridge, Mass., who determined the species. Mr. Krieger's notes are as follows: "Collected by Mr. Simon Davis in Stow, Massachusetts, August 25, 1910, in a tamarack swamp, at the foot of a maple.

Pileus 8 cm. broad, explanate, elevated at the very dark brown disk, paler toward the margin, moist and oily to the touch, smooth but covered with numerous, rather flat, grayish or light brownish woolly warts. The margin non-striate or very indistinctly short-striate. Flesh thick at the disk, thinning out toward the margin, dark brownish and watery.

Lamellae rather broad (9 mm.), tapering toward the stem, attached, moderately close, irregularly dimidiate, somewhat eroded on their edges, whitish when fresh, later on buff-colored and watery, becoming almost fluid and (on the application of moderate artificial heat) drying with excessive slowness into an agglutinated dark mass.

Stem 11 cm. long, terete, 1.9 cm. thick at the abruptly terminating, non-bulbous base, tapering toward the apex to a diameter of 9 mm.; pale dirty brown, almost white above, darker and more reddish brown below. The surface below the annulus covered with brown, downward-pointing and very loosely attached fibrillose squamules which are more conspicuous near the base; the surface above the annulus marked with horizontal zigzag broadish lines, indicating a rupture of the cortex. The very base of a brown ochre color, apparently stuffed, becoming hollow. *Flesh* watery, flaccid.

Annulus superior, cream-colored, medium size, spreading; margin frayed.

Volva absent at the base of the stem but present on the surface of the pileus, as described above.

Spores white, $6 \times 9 \mu$, borne on basidia having but two sterigmata each."

Lepiota haematosperma Bull. (*Inocybe echinata* Roth.) has had a varied history in systematic Mycology. It has been placed in *Psalliota* on account of the color of the spores when fresh. Masee places it in *Inocybe*. But it is more satisfactory to have it placed in *Lepiota* on account of its almost or quite free gills and the pale yellow spores. See Quélet-Bataille Flore Monographique des Amanites et des Lépiotes, 1902, p. 73.

From the fresh plants I failed to get a spore print, but a microscopic examination of the spores of the dried plant showed them a pale yellow. My plants were small and very noticeable when first seen for the fringe-like appendiculate margin of the pileus, a character that disappeared before my return to the city. The plants, upon drying, have become jet black, as mentioned by Smith in the above named work. On this particular trip I was accompanied by Dr. W. W. Ford who was desirous of collecting all the poisonous species of *Amanita* we could find. There was a deer in the woods bent upon the same errand, and in football parlance it was *first down* for the deer, for the doctor having left his bag upon the ground and open, returned later only to find that its contents had been eaten, with what injurious effects, if any, we know not, though the doctor offered a substantial reward for the return of the deer, dead or alive, within 48 hours.

Russula abietina Pk., was collected at intervals during July and August; I had little difficulty identifying the plant and my determination was confirmed by Dr. Peck. My plants had an olive-green pileus with a brown or blackish center and were found in a swamp under pines and tamaracks and *not* under balsam fir as noted by Dr. Peck in his monograph upon the genus *Russula*. This is the second consecutive season I have collected this plant in this locality. It is an attractive plant but almost invariably riddled with larvae.

Early in July I found three plants of an interesting *Inocybe* which Dr. Peck considered to be *I. commixta* Bres., or near that species; see Bresadola, t. LVIII, f. 2. My plants were not so white as Bresadola's, but they were remarkable for the white floccose veil which was very apparent upon two of them. Quélet and Bresadola seem to think it a close relative of *I. geophylla* (Sow.) Fr. I hope to meet with this plant in the year to come in sufficient numbers to solve doubts about its identity. *Inocybe intricata* Pk. was scarce. In all I col-

lected but five plants, where usually the season gives me twenty-five or thirty. It affects swamps, and cannot be determined without the aid of a microscope. To me its two distinguishing features are its coarsely nodulose spores and grayish white gills.

Gomphidius gracilis B. & Br. and *Gomphidius maculatus* Fr. were both found in a swamp under pines in sphagnum and were much larger than in 1909 and also more typical. Berkeley's illustration of *G. gracilis* does not agree with his description. *G. vinicolor* Pk. suggests to me *G. gracilis* B. & Br.

On September 10 I found an interesting collection of *Entoloma rhodopolium* Fr. and *Entoloma nidorosum* Fr.; they grew together, gregariously, in a space of about 4 feet in diameter in a swamp wherein I find these species year after year. I picked in all about 40 specimens and placed them in two piles according to presence or absence of odor. About two hours elapsed before I reached home and when I opened the packages the odor had entirely evaporated from the plants I called *E. nidorosum*. I have done this same thing for three successive years with like results. I believe the difference between these two species, if any exists, should be confined to stature; *E. rhodopolium* being larger than *E. nidorosum*. Fries in *Hymenomyces Europaei*, p. 196, says that *E. nidorosum* is "fragile with a strong alkaline odor; much thinner than *E. rhodopolium*, which is somewhat like it."

Tricholoma ustale Fr., or if not that plant then a plant belonging to that group, showed itself for the first time September 15, and continued in limited number for ten (10) weeks. The plants were smaller than usual. It grows in gravelly soil in sphagnum under scrub pines in company with *Hygrophorus hypothejus* Fr. and *Cantharellus dichotomus* Pk. Barla and Fries both give very good illustrations of this *Tricholoma* as I have found it for three successive seasons.

Hygrophorus laurae Morgan, *H. flavodiscus* Frost and *H. fuliginosus* Frost were very scarce owing to the prevailing drought. I found a number of plants that had emerged from the ground only to dry up before maturity. I wonder how many know that *H. laurae* possesses the property of staining one's fingers as though dyed with sumach? Such is my experience.

A most interesting and very handsome *Polyporus* may be found occasionally upon old and decayed apple trees. It is *P. admirabilis* Pk. For description see Bulletin of the Torrey Botanical Club, 26,

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p. 61, from which I quote the following: "This is a very beautiful and attractive species . . . the fresh tufts of clear white trumpet shaped pilei are suggestive of a cluster of giant calla lilies." It is probably rare, as Mr. C. G. Lloyd writes me that he has never received it but from two correspondents. I quote the following from Mr. Lloyd's letter as it may interest those who are students of the *Polyporaceae*: "With regard to *Polyporus admirabilis* . . . it is related to *P. squamosus* and belongs to the same section, for when well developed it has indications of a black base and rudimentary stipe. As a matter of relationship the plant is more closely related to *P. varius* of Europe than to any other species, having the very minute pores and hard context which are the characters of *P. varius*, and both of them opposed to the leading characters of *squamosus*. They all belong however to the section *Melanopus*, characterized by a black stipe."

Flammula betulina Pk. and *Naucoria firma* Pk. were both found in limited quantity and smaller in size than usual, in their regular habitats. Both grew in a grove of chestnut, the former upon decayed white birch logs, the latter upon both white birch and decayed chestnut limbs.

Hygrophorus coloratus Pk. was quite as abundant as usual and more highly colored; young plants were found with pilei entirely egg-yellow, and some entirely orange. It is certainly a very attractive plant in situ. I have found it for successive seasons in a swamp under pines, tamaracks and maples. It is an excellent mushroom to eat.

Clavaria pallescens Pk. was more abundant and larger in size than at any time since its discovery in 1908, when I first sent it to Dr. Peck. While it bears a strong resemblance to *C. ligula* Schaeff., Dr. Peck certainly advances good reasons for believing it a new and distinct species and has had abundant material upon which to base his opinion.

During October and November I found many plants of *Hygrophorus hypothejus* Fr., and I was particularly pleased to find the alleged variety "mendax" of Kalchbrenner. An illustration of this plant is given on Plate XXVII of Kalchbrenner's *Icones*. I firmly believe it is our duty to notice every departure from the type, but I fail to see any good result to be obtained from an attempt to lend undue importance to such a very slight variation from the type as "mendax" exhibits, and judging from the author's own words his conscience smote him before he concluded his work above named.

Apparently he was deceived by buttons that were cupola-shaped; "petasiformis" is his exact word; if he had waited for his buttons to develop he would never have tried to create such a mendacious variety. I found, however, a very curious departure from the type in a plant which was *entirely orange*. Fries notes this possibility in *Hymen. Europ.* and speaks of this species as changeable in color and variable in size, all of which I have observed since 1906. The plant is perfectly edible, fresh or dried.

Pluteolus callistus Pk., one plant only came to hand in August. It was not typical but was easily recognized by structure, color of spores in mass and habitat. I have collected a very few plants each season since 1907. I always find it in swamps growing from decayed maple or tamarack.

I believe it a very rare plant. When in good condition and fresh the pileus is a rich "Indian Yellow" with the center a bright deep yellow orange; stem pale citron yellow-above, duller below owing to a whitish or greyish pubescence which covers it; gills a dull pale ochraceous yellow, adnexed, and finely uneven on the edges as may be seen under a lens; flesh of both pileus and stem bright citron yellow. It will be noted that I have always found it on decayed, rotten wood and not in "exsiccated water holes in low swampy woods" as described by Dr. Peck. The determination was confirmed by Dr. Peck. I should add that the colors are transient.

In conclusion I beg to suggest to fellow students the wisdom of sticking to one locality. Dr. W. G. Farlow impressed this upon me some years ago, and I know from experience that his advice was correct. You can never exhaust one locality, probably, but whether you can or cannot, is not the point as I see it. Yearly observations, intelligently conducted, enable us to note any differences in species and consequently to check the multiplication of alleged new species that have no real claim to specific distinction.

Of the species mentioned in this paper specimens of the following have been sent to the New York State Herbarium at Albany, N. Y.: *Clavaria pallescens* Pk., *Collybia strictipes* Pk., *Entoloma grande* Pk., *E. modestum* Pk., *E. strictius* Pk., *Gomphidius vinicolor* Pk., *Hygrophorus coloratus* Pk., *H. flavodiscus* Frost, *H. fuliginosus* Frost, *H. lauræ* Morgan, *Inocybe commixta* Bres., *I. intricata* Pk., *Pluteolus callistus* Pk., *Polyporus admirabilis* Pk., *Russula abietina* Pk., *R. palustris* Pk., *Tricholoma ustale* Fr.

Specimens of the small white and small black *Hygrophorus*, of *Amanita cariosa* (Fr.) Gill., and of *Tricholoma ustale* Fr. were given to Dr. W. G. Farlow of Cambridge, Massachusetts.

BROOKLINE, MASSACHUSETTS.

THE RECENT TREATMENT OF PANICUM COMPARED WITH THAT IN GRAY'S MANUAL.

WALTER DEANE.

DURING the revision of the genus *Panicum* in my Herbarium I have been making a most interesting comparison between the species and varieties treated in Gray's Manual, 7th ed., 1908 (in which the *Gramineae* were revised by Prof. A. S. Hitchcock) and the corresponding forms from the same geographic area as treated in the recent work by Prof. Hitchcock and Mrs. Agnes Chase, *The North American Species of Panicum*, published in Washington in 1910. In the latter work there are some changes in synonymy, several species and one variety have been added, and a few other changes have been made. These have been remarkably few considering the number of species involved and the extent of the area included. Careful search will doubtless disclose other species within our limits.

In the Gray's Manual there are 74 species (*P. tenue* Muhl. not being numbered) and 4 varieties of *Panicum*. In *The North American Species of Panicum* there are 91 species and 5 varieties recorded from the same region.

Mrs. Chase has suggested to me that the readers of RHODORA might be interested in these changes. I append a list, which has been kindly examined by Prof. Hitchcock and Mrs. Chase, including all additions, changes in synonymy, elimination of species, etc. Each species or variety is preceded by its number as occurring in Hitchcock and Chase's work. After additional species the Manual stations are given in which they occur, and also the natural group in which the species belongs.